What is claimed is:

1. A phase shift mask for use with light at a wavelength comprising:

a first phase shift section, a half tone section, and a second phase shift section;

said first phase shift section adjacent to said half tone section;

said half tone section adjacent to said second phase shift section;

said first phase shift section and half tone section changing the phase of incident light by about 180 degrees with respect to said second phase shift section.

2. The phase shift mask of claim 1 which further includes

said first phase shift section comprised of a first phase shift region of a mask substrate;

a trench in said first phase shift region; and

said half tone section comprised of (i) a half tone region of said mask substrate and (ii) a half tone layer over said half tone region;

said second phase shift section has about a 0 degree phase shift.

3. The phase shift mask of claim 1 which further includes:

said first phase shift section comprised of (i) a first phase shift region of a mask substrate and (ii) a first trench in said first phase shift region;

said half tone section comprised of a half tone region of said mask substrate and a half tone layer over said half tone region; said half tone layer has a transmittance between about 3 and 30%; and

said second phase shift section has about a 0 degree phase shift.

4. The phase shift mask of claim 1 which further includes :

said first phase shift section comprised of (i) a first phase shift region of a mask substrate and (ii) a first trench in said first phase shift region; and

said half tone section comprised of a half tone region of said mask substrate and a half tone layer over said half tone region;

said half tone layer has a transmittance between about 3 and 30%;

said second phase shift section comprised of (a) a second phase shift region of said mask substrate and (b) a second trench in said second phase shift region;

said second phase shift section has about a 90 degree phase shift.

5. The phase shift mask of claim 1 wherein said second phase shift region has about a 100 % transmittance.

6. The phase shift mask of claim 1 wherein said half tone section has a transmittance that balances the light intensities transmitted through said first phase shift region and said second phase shift region so that the light intensities are about equal.

7. A semiconductor device formed by using the phase shift mask of claim 1.

8. A phase shift mask for use with light at a wavelength comprising:

a mask substrate having a first phase shift region, a half tone region, and a second phase shift region;

said first phase shift region adjacent to said half tone region;

said half tone region adjacent to said second phase shift region;

a half tone layer over said half tone region;

said first phase shift region and half tone layer changing the phase of incident light by about 180 degrees with respect to said second phase shift region.

9. The phase shift mask of claim 8 which further includes a trench in said mask substrate in said first phase shift region; and

said second phase shift region has about a 0 degree phase shift; and

said half tone region has a transmittance between about 0.1 and 98 %.

10. The phase shift mask of claim 8 which further includes a trench in said mask substrate in said second phase shift region; and

said first phase shift region has about a 0 degree phase shift;

said half tone layer has a transmittance between about 3 and 30%.

11. The phase shift mask of claim 8 which further includes:

a first trench in said first phase shift region; and

a second trench in said second phase shift region; and

said half tone layer has a transmittance between about 3 and 30%.

12. The phase shift mask of claim 8 wherein said half tone layer has a transmittance between about 3 and 30% .

13. The phase shift mask of claim 8 wherein said second phase shift region has about a 100 % transmittance.

14. The phase shift mask of claim 8 wherein said half tone layer has a transmittance that balances the light intensities transmitted through said first phase shift region and said second phase shift region so that the light intensities are about equal.

15. A semiconductor device formed by using the phase shift mask of claim 8.

16. A phase shift mask for use with light at a wavelength comprising:

a mask substrate having a phase shift region, a half tone region and an unshifted phase region;

a half tone layer over said half tone region;

said phase shift region adjacent to said half tone region;

said half tone region adjacent to said unshifted phase region;

said phase shift region has about a 180 degree phase shift with respect to said unshifted phase region,

said half tone layer has a phase shift of about a 180 degrees with respect to said unshifted phase region, said half tone layer has a transmittance between about 3 and 30%; and

said unshifted phase region has a shift of about 0 degrees.

17. The phase shift mask of claim 16 which further includes a trench in said phase shift region.

18. The phase shift mask of claim 16 wherein said unshifted phase region has about a 100 % transmittance and about a 0 degree phase shift with the incoming light.

19. The phase shift mask of claim 16 wherein said phase shift region has a phase shift such that light that at said wavelength transmitted through said phase shift region is shifted in phase by about 180 degrees relative to said light at said wavelength transmitted through said unshifted phase region.

20. The phase shift mask of claim 16 wherein said half tone region has a transmittance that balances the light intensities transmitted through said phase shift region and said unshifted region so that the light intensities are about equal.

21. A semiconductor device formed by using the phase shift mask of claim 16.

22. A phase shift mask for use with light at a wavelength comprising:

a) a mask substrate has a first phase shift region, a half tone region and an second phase shift region;

b) a half tone layer over said half tone region; said half tone layer has a transmittance between about 0.1 and 98 %;

c) said first phase shift region and half tone layer have an about 180 degree phase shift with respect to said second phase shift region;

d) said first phase shift region adjacent to said half tone region;

e) said half tone region adjacent to said second phase shift region.

23. The phase shift mask of claim 22 wherein a first trench in said first phase shift region; said first phase shift region has about a 100 % transmittance.

24. The phase shift mask of claim 22 wherein said half tone layer has a transmittance between about 3 and 30% .

25. The phase shift mask of claim 22 wherein said second phase shift region has about a 100 % transmittance.

26. A semiconductor device formed by using the phase shift mask of claim 22.

27. A method for forming a single trench half tone phase shift mask for use with light at a wavelength comprising:

a) providing a substrate having a phase shift region, a half tone region and an unshifted phase region; said phase shift region adjacent to said half tone region; said half tone region adjacent to said unshifted phase region;

b) forming a half tone layer on said substrate in said half tone region; said half tone layer has a phase shift of about 180 degrees with said unshifted phase region, said half tone layer has a transmittance between about 3 and 30%;

c) forming a trench in said substrate in said phase shift region; said phase shift region has an about 180 degree phase shift with said unshifted phase region.

28. The method of claim 27 wherein said trench formed to a first depth such that light that at said wavelength transmitted through said phase shift region is shifted in phase by 180 degrees relative to said light at said wavelength transmitted through said unshifted phase region.

29. A method for forming a half tone single trench phase shift mask for use with light at a wavelength comprising:

a) providing a substrate having a phase shift region, a half tone region and an unshifted phase region and an opaque region;
said phase shift region adjacent to half tone region;
said half tone region adjacent to an unshifted phase region;

b) forming a half tone layer on said substrate;

c) forming an opaque layer on said half tone layer;

d) forming a first resist layer on said opaque layer;

e) removing portions of said first resist layer to form a first resist pattern over said half tone region and said opaque region;

f) patterning said an opaque layer on said half tone layer using the first resist pattern as a mask form a first opaque pattern and a half tone layer pattern over said half tone region;

g) removing said first resist layer;

h) forming a second resist layer over said opaque layer on said half tone layer and said substrate;

i) removing portions of said second resist layer to form a second resist pattern over said unshifted region and said opaque region and to form second resist layer openings over said phase shift region;

j) forming a trench in said phase shift region; said trench has a depth so that said phase shift region has a phase shift of 180 degrees with said unshifted phase region;

k) removing said second resist pattern;

l) forming a third resist layer over said substrate;

m) removing portions of said third resist layer to form a third resist layer pattern over the opaque region and to form a third resist layer openings to expose said phase shift region, said half tone region and an unshifted phase region;

n) removing said opaque layer from over said half tone region layer in said half tone regions;

o) removing said third resist layer.

30. The method of claim 29 wherein half tone layer has a 180 degree phase shift with said unshifted phase region.

31. The method of claim 29 which further includes etching said half tone pattern to control the transmission of the said half tone pattern.

32. The method of claim 29 wherein said substrate is a mask blank comprised of quartz.

33. The method of claim 29 wherein said half tone layer is comprised of a material selected from the group consisting of: molybdenum silicide, molybdenum silicon oxide, silicon nitride, and silicon oxinitride.

34. The method of claim 29 wherein said opaque layer is comprised of chrome.

35. The method of claim 29 wherein the patterning said opaque layer on said half tone layer is performed using a reactive ion etch.

36. The method of claim 29 wherein said first resist layer is negative or positive type photoresist.

37. A method for a phase shift mask for use with light at a wavelength comprising:

a) providing a mask substrate having a first phase shift region, a half tone region and an second phase shift region;

b) said first phase shift region adjacent to said half tone region; said half tone region adjacent to said second phase shift region;

c) forming a first trench in said substrate in said first phase shift region; said phase shift region has an about 180 degree phase shift with said unshifted phase region, said first phase shift region has about a 100 % transmittance;

d) forming a half tone layer on said mask substrate in said half tone region; said half tone layer has a phase shift of about 180 degrees with said first phase shift region; said half tone layer has a transmittance between about 0 and 100 % ;

e) forming a second trench in said substrate in said second phase shift region; said second phase shift region has an about 180 degree phase shift with said first phase shift region.

38. The method of claim 37 wherein said first phase shift region creates a phase shift of about 270 degrees on incident light;

said second phase shift region and said half tone layer creates a phase shift of about 90 degrees on incident light.

39. The method of claim 37 wherein said half tone layer has a transmittance between about 3 and 30 % .

40. A method for forming a half tone dual trench phase shift mask for use with light at a wavelength comprising:

a) providing a substrate having a first phase shift region, a half tone region and an second phase shift region and an opaque region; said first phase shift region adjacent to said half tone region; said half tone region adjacent said second phase shift region;

b) forming a half tone layer on said substrate;

c) forming an opaque layer on said half tone layer;

d) forming a first resist layer on said opaque layer;

e) removing portions of said first resist layer to form a first resist pattern over said half tone region and said opaque region;

f) patterning said an opaque layer on said half tone layer using the first resist pattern as a mask form a first opaque pattern and a half tone pattern over said half tone region;

g) forming second trenches in the substrate in the second phase shift region and partial first trenches in the first phase shift regions;

h) removing said first resist layer;

i) forming a second resist layer over said opaque layer on said half tone layer and said substrate;

j) removing portions of said second resist layer to form a second resist pattern over said second phase shift region and said opaque region and to form second resist layer openings over said first phase shift region;

k) forming a first trench in said first phase shift region; said first trench has a depth so that said first phase shift region has a phase shift of about 180 degrees relative to said second phase shift region;

l) removing said second resist pattern;

m) forming a third resist layer over said substrate;

n) removing portions of said third resist layer to form a third resist pattern over said opaque region and to form a third resist layer openings to expose said half tone pattern in said first phase shift regions, and said half tone region and an second phase shift region;

o) removing said opaque patterns from over said half tone pattern in said half tone regions;

p) removing said third resist pattern.

41. The method of claim 40 wherein said first phase shift region creates a phase shift of about 270 degrees on incident light;

said second phase shift region and said half tone layer creates a phase shift of about 90 degrees on incident light.

42. The method of claim 40 which further includes etching said half tone pattern to control the transmission of the said half tone pattern.

43. The method of claim 40 wherein said substrate is a mask blank comprised of quartz.

44. The method of claim 40 wherein said half tone layer is comprised of a material selected from the group consisting of: molybdenum silicide, molybdenum silicon oxide, silicon nitride, and silicon oxynitride.

45. The method of claim 40 wherein said opaque layer is comprised of chrome.

46. The method of claim 40 wherein the patterning said opaque layer on said half tone layer is performed using a reactive ion etch.

47. The method of claim 40 wherein said first resist layer is negative or positive type photoresist.

48. A method of fabricating a semiconductor device the method comprising:

a) providing a phase shift mask comprising:

(1) a mask substrate having a first phase shift section, a half tone section and a second phase section;

said first phase shift section adjacent to said half tone section;

said half tone section adjacent to said second phase section;

said first phase shift section and said half tone section have about a 180 degree phase shift with said second phase section;

said half tone section has a transmittance between about 0.1 and 98 %;

b) transmitting radiation through portions of the phase shift mask to expose a pattern of photoresist overlying a semiconductor workpiece; and

c) utilizing the patterned photoresist to fabricate a semiconductor device.

49. The method of claim 48 wherein said half tone section comprises a half tone region of a mask substrate and a half tone layer over said half tone region, said half tone layer has a transmittance between about 3 and 30 %.

50. The method of claim 48 wherein said phase shift mask further includes;

said first phase shift section comprises a first phase shift region of a mask substrate;

a first trench in said mask substrate in said first phase shift region; and

said second phase section has about a 0 degree phase shift.

51. The method of claim 48 wherein said phase shift mask includes:

a mask substrate having a first phase shift region, a half tone region and a second phase shift region;

a first trench in said first phase shift region; and

said first phase shift region has about a 0 degree phase shift;

said half tone layer has a transmittance between about 3 and 30%; and

a second trench in said second phase shift region.

52. The method of claim 48 wherein said phase shift mask includes:

a mask substrate having a first phase shift region, a half tone region and a second phase shift region;

a first trench in said mask substrate in said first phase shift region; and

a second trench in said mask substrate in said second phase shift region; and

said half tone layer has a transmittance between about 3 and 30%.

53. The method of claim 48 wherein said half tone region has a transmittance that about balances the light intensities transmitted through said first phase shift region and said second phase shift region so that the light intensities are about equal.

54. A method of fabricating a semiconductor device the method comprising:

a) providing a single trench half tone phase mask comprising:

(1) a phase shift section, a half tone section and an unshifted phase section;

(2) said phase shift section adjacent to said half tone section;

(3) said half tone section adjacent to said unshifted phase section;

(4) said phase shift section has an about 180 degree phase shift with said unshifted phase section;

(5) said half tone section has a phase shift of about 180 degrees with said unshifted phase section, said half tone section has a transmittance between about 0.1 and 98 %;

b) transmitting radiation through portions of the phase shift mask to expose a pattern of photoresist overlying a semiconductor work piece; and

c) utilizing the patterned photoresist to fabricate a semiconductor device.

55. The method of claim 54 wherein:

said first phase shift section comprised of a first phase shift region of a mask substrate;

a trench in said first phase shift region; and

said half tone section comprised of (i) a half tone region of said mask substrate and (ii) a half tone layer over said half tone region;

said second phase shift section has about a 0 degree phase shift.

56. The method of claim 54 wherein :

said first phase shift section comprised of (i) a first phase shift region of a mask substrate and (ii) a first trench in said first phase shift region;

said half tone section comprised of a half tone region of said mask substrate and a half tone layer over said half tone region; said half tone layer has a transmittance between about 3 and 30%; and

said second phase shift section has about a 0 degree phase shift.

57. The method of claim 54 wherein said half tone layer has a transmittance between about 3 and 30%.